Instruction Manual

Meade 70AZ-TR
70mm Compact Refractor Telescope

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Meade 70mm Compact Refractor Telescope

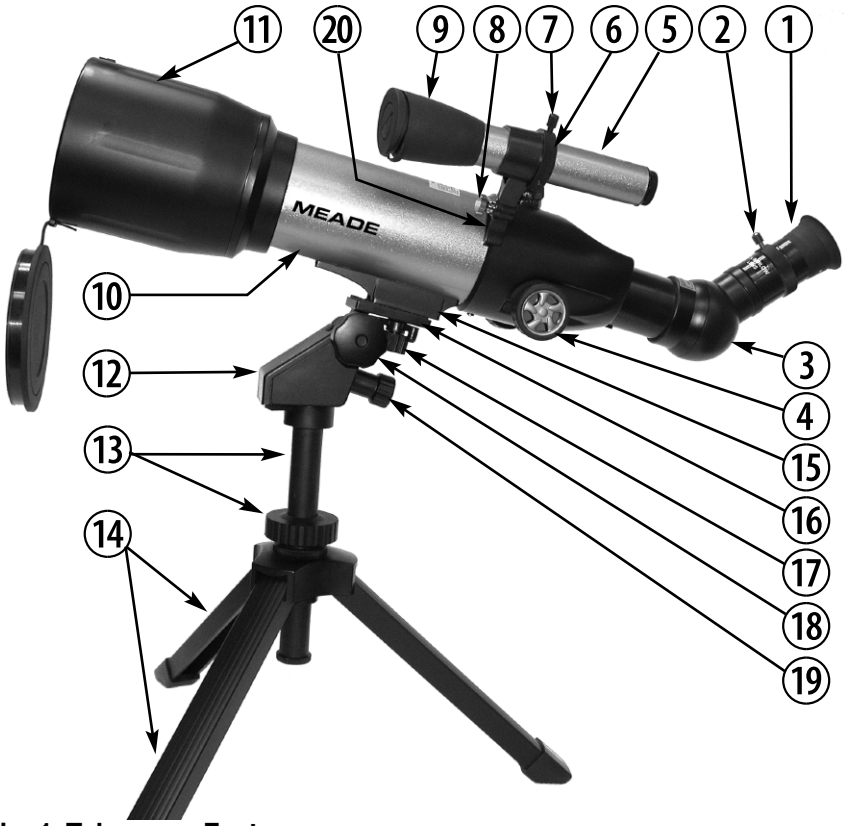

Fig. 1: Telescope Features

1. Eyepiece
2. Eyepiece thumbscrew
3. Erecting roof prism with click-stop positions
4. Focus knob
5. Viewfinder
6. Viewfinder holder
7. Viewfinder attachment screws
8. Viewfinder holder lock knob
9. Viewfinder dew shield/rain guard
10. Optical tube
11. Dew shield/rain guard
12. Slow motion horizontal Control knob (not visible on other side)
13. Tripod locking ring/shaft
14. Tripod leg
15. Tripod attachment platform
16. Tripod attachment base
17. Tripod securing knob
18. Vertical lock knob
19. Slow motion altitude control knob
20. Viewfinder base attachment point

WARNING:

RECOMMENDED FOR CHILDREN OVER THE AGE OF 5 WITH ADULT SUPERVISION ONLY

NEVER USE A MEADE 70MM COMPACT REFRACTOR TELESCOPE TO LOOK AT THE SUN! LOOKING AT OR NEAR THE SUN WILL CAUSE INSTANT AND IRREVERSIBLE DAMAGE TO YOUR EYE. EYE DAMAGE IS OFTEN PAINLESS, SO THERE IS NO WARNING TO THE OBSERVER THAT DAMAGE HAS OCCURRED UNTIL IT IS TOO LATE. DO NOT POINT THE TELESCOPE AT OR NEAR THE SUN. CHILDREN SHOULD ALWAYS HAVE ADULT SUPERVISION WHILE OBSERVING.

INTRODUCTION

The Meade 70mm Compact Refractor is an easy to operate telescope, designed for both astronomical and terrestrial observing. Please take a few moments to read the instruction manual and familiarize yourself with its features.

ASSEMBLING THE TELESCOPE:

Numbers in parentheses refer to Fig. 1.

1. To assemble the telescope, first unfold the tripod legs **(14)**. Place the hole on the bottom of the tripod attachment platform **(15)** over the bolt on the tripod attachment base **(16)** and tighten the holder attachment knob **(17)** to secure the optical tube to the tripod.
2. Slide an eyepiece **(1)** into the erecting roof prism **(3)** and tighten the eyepiece thumbscrew **(2)** to a firm feel.
3. Attach the viewfinder bracket by sliding the lip of the viewfinder base into the slot provided (**20**) in the rear cell.
4. Slide the viewfinder tube **(5)** into the viewfinder holder **(6)** and tighten the viewfinder attachment screws **(7)**. Before using the viewfinder, you will need to align it. See “Aligning the Viewfinder,” page 4.

   You may adjust the position of the Viewfinder by loosening the Viewfinder holder lock knob **(8)** and then moving the viewfinder to a convenient viewing position. Relock the knob when you are finished.
5. Loosen the tripod lock ring **(13)** and lift or lower the telescope to a comfortable height. Relock the tripod lock ring.
6. Loosen the Vertical Lock knob **(18)** and adjust the angle of the optical tube to a position that allows you to observe comfortably. Retighten the knob, but do not overtighten—you may want to adjust the tube’s position from time to time while you are observing.

If you need to gain a more vertical tube position for observing, reverse the direction of the tube assembly on the mount.

7. Open the rain guards covers on both the optical tube **(11)** and the viewfinder **(9)** before observing.

TO SIGHT IN ON AN OBJECT AND ACHIEVE A SHARP FOCUS:

1. Place the telescope on a stable surface.
2. View objects that are at least 30 feet away.
3. Rotate the altitude control knob **(19)** counterclockwise to move the optical tube **(10)** up and clockwise to move the tube down. If necessary, you may also loosen the vertical lock knob (**18**) and adjust the tube up or down. Remember to relock the knob to a firm feel when you are finished.
4. Rotate the horizontal control knob counterclockwise **(12)** to move the optical tube to the right and clockwise to move the tube left.
5. Look through the eyepiece **(1)** and rotate the focus knob **(4)**. Turn the knob with a slow and gentle motion until the object is in sharp focus.

ALIGN THE VIEWFINDER:

Perform this procedure during the daytime.

1. Pick out a well-defined land object, such as a light post or street sign. Focus and center it in your optical tube's eyepiece **(1)**.

2. Adjust the viewfinder position by loosening or tightening one or more of the adjustment screws **(7)** until the crosshair in the viewfinder's eyepiece is centered on the same object centered in the eyepiece.

   Now the viewfinder will point to the same position as the optical tube eyepiece. As the viewfinder has a wider field of view than the optical tube eyepiece, it is easier to locate objects using the viewfinder than locating them in the telescope's eyepiece.

USING THE TELESCOPE

When the telescope is assembled, you are ready to begin observations.

1. Observing land objects during the daytime is a good way to become accustomed to the functions and operations of the telescope. At night, try observing the Moon first (if it is visible) or a bright star.
2. Use the MA17.5mm eyepiece and center an object in the telescope's field of view. The included MA17.5mm eyepiece is the best eyepiece to use for the initial finding and centering of an

object. The low power MA17.5mm eyepiece presents a bright, wide field of view, ideal for terrestrial and general astronomical observing.

For lunar and planetary viewing, switch to a higher power eyepiece such as the standard equipment MA9mm. Also consider using the provided 2X Barlow lens. If the image starts to become fuzzy as magnification is increased—back down to a lower power. See "Power" for more information about the Barlow lens.

3. If you are observing an astronomical object, you will immediately notice that the object moves in a rather slow but continuous motion across the telescopic field of view. This motion is caused by the rotation of the Earth which results in the motion of the object in the telescope's field of view.

   To keep astronomical objects centered, simply move the telescope using the altitude **(19)** or horizontal **(12)** control knobs. In the higher power MA9mm eyepiece, astronomical objects will seem to move through the field more rapidly. Place the object on the edge of the field of view and watch as it drifts to the opposite side, then reposition the telescope so the object can drift through the field again.

4. Avoid touching the eyepiece while observing. Vibrations resulting from such contact will cause the image to move. Viewing from the upper floors of a building may also introduce image movement.

5. Allow a few minutes for your eyes to become "dark adapted" before you begin any serious observations.

6. Some atmospheric conditions can distort an observed image. Planets, in particular, viewed while low on the horizon, lack sharpness. When observed higher in the sky, a planet will often appear to be more steady and have greater contrast. Turbulent air in the upper atmosphere can cause the images to "shimmer" in the eyepiece. Use the MA17.5mm eyepiece until the image steadies. Keep in mind that a bright, clearly resolved, but smaller image will show far more interesting detail than a larger, dimmer, fuzzy image.

7. A number of fascinating objects are visible through your Meade 70mm compact refractor:

- **Jupiter:** Jupiter has cloud belts across its surface. It's four major moons change position around the planet each night.
- **Saturn**: Saturn's ring system is one of the best celestial sights.

- **The Moon:** Our Moon offers craters, mountain ranges and fault lines. The Moon is best observed during its crescent or half phase when sunlight strikes the Moon's surface at an angle—resulting shadows add a sense of depth to the view. No shadows are visible during a full Moon, causing the Moon's surface to appear flat and uninteresting.
- **Deep-Space:** Deep Space objects are best viewed at a dark site, away from city and other lights. Such objects include nebulae, galaxies, multiple star systems, and star clusters.
- **Terrestrial objects:** Your telescope may also be used for high resolution land viewing. Terrestrial observations should almost always be made using a low power eyepiece (such as the 17.5mm) for bright, sharp images. Land objects offer limited applications at higher powers because the telescope is being pointed through the thickest part of the Earth's atmosphere, which typically distorts images in the eyepiece.

The general rule regarding power: Only use as much magnification as supports a steady, well-defined image. The stability of the air varies and is one reason why having various eyepieces is highly desirable. *Higher powers are no guaranty of better images; in fact, the opposite is often true. Keep in mind, that land viewing and wide-field, deep-space observation generally operate best with low-powered eyepieces.*

POWER

The power, or magnification, of a telescope when used with a particular eyepiece is determined by two factors: the focal length of the telescope's main (objective) lens and the focal length of the eyepiece being used. The Barlow lens doubles the power of an eyepiece. To use the 2X Barlow lens, place the Barlow into the roof prism **(3)**, followed by the eyepiece. Use the thumbscrew **(2)** to tighten in place.

The magnification values available with your eyepieces are as follows:

Eyepiece	**Power**	**With 2X Barlow Lens**
MA17.5mm	20X	40X
MA9mm	39X	78X

MAINTENANCE

The Meade 70mm Compact Refractor telescope should be stored in a dry and dust-free location. It should not be stored in direct sunlight. Avoid overcleaning the lens. A little dust on the the lens hardly affects image quality.

Compass: A compass is provided to allow you to orient yourself to the land or sky.

SPECIFICATIONS

Objective (main) lens focal length	350mm
Objective lens diameter	70mm
Mounting type	Table-top Altazimuth
Eyepieces (1.25” Diameter)	MA17.5mm MA9mm
Barlow lens	2X
Erecting Roof Prism	Included
Soft carry case	Included
Table top tripod	Included
Compass	Included
Rubber Rain guard	Included

Limited Warranty

Every Meade telescope, spotting scope, and telescope accessory is warranted by Meade Instruments Corporation (“Meade”) to be free of defects in materials and workmanship for a period of ONE YEAR from the date of original purchase in the U.S.A. Meade will repair or replace a product, or part thereof, found by Meade to be defective, provided the defective part is returned to Meade, freight-prepaid, with proof of purchase. **This warranty applies to the original purchaser only and is non-transferable. Meade products purchased outside North America are not included in this warranty, but are covered under separate warranties issued by Meade international distributors.**

RGA Number Required: Prior to the return of any product or part, a Return Goods Authorization (RGA) number **must** be obtained from Meade by writing, or by calling (949) 451-1450. Each returned part or product must include a written statement detailing the nature of the claimed defect, as well as the owner’s name, address, and phone number.

This warranty is not valid in cases where the product has been abused or mishandled, where unauthorized repairs have been attempted or performed, or where depreciation of the product is due to normal wear-and-tear. Meade specifically disclaims special, indirect, or consequential damages or lost profit which may result from a breach of this warranty. Any implied warranties which cannot be disclaimed are hereby limited to a term of one year from the date of original retail purchase.

This warranty gives you specific rights. You may have other rights which vary from state to state.

Meade reserves the right to change product specifications or to discontinue products without notice.

This warranty supersedes all previous Meade product warranties.

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